Vegetation Inventory of
The Sinlakekin Wildlife Area

Comprehensive Vascular Plant List
Rare Plant Species
Weed Inventory

Cypripedium parviflorum
Threatened in Washington
Present on the Sinlahekin

Inventory conducted for:
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October 31, 2003

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April-August, 2003

Introduction

The Sinlahekin Wildlife Area (SWA) consists of approximately 14,000 acres of diverse habitat, ranging from semi-arid shrub-steppe to montane forest, and from an extensive network of low-lying lakes, streams and wetlands to expanses of sheer, rocky cliffs. This wildlife area was originally created in 1939 to ensure adequate habitat for mule deer and other popular game animals, but the large number of vascular plant species found during this vegetation study suggests that the Sinlahekin Wildlife Area is valuable as well for its high degree of biological diversity.

The primary goals of this project are to 1) identify and rank by abundance all of vascular plant species present on the SWA, 2) locate, map and assess the viability of all of the Threatened, Endangered and Sensitive (TES) plants on the SWA, and 3) locate, identify and assess the abundance of noxious weed species present.

To conduct this inventory, a team of three botanists visited the Sinlahekin weekly between mid-April and early August, following the blooming season from the lower elevation habitats to the upper ones. All habitats were visited on more than one occasion to ensure that both early- and late-flowering species were observed. Every vascular plant that was encountered was identified to species, as were the majority of non-vascular plant species (horsetails, mosses, liverworts, and lichens, excepting, in this latter category, the diminutive crustose lichens). The abundance of each species across the landscape was tracked and recorded, and any special classification that individual species might have earned as either a state-listed TES species or as a non-native plant was researched and recorded.

Results and Discussion

Results from this vegetation inventory of the Sinlahekin Wildlife Area include:

- 510 species of vascular plants were identified;
- 32 species of the genus *Carex* (sedges) were found;
- The SWA has 10 vascular plant species that are listed as TES plants or are unusually rare in some other regard;
- 107 of the SWA's vascular plant species, or 21% of the total, are non-native, weedy species;
- In addition 42 lichen species and 35 moss and liverwort species of the SWA were identified.

Hackelia micrantha, blue stickseed
An attractive native species
of the Sinlahekin

These numbers are of interest from several perspectives. The total number of vascular plant species known in Washington is approximately 3800, so the 510 species on the Sinlahekin represents 13% of the entire vascular plant diversity of the state. Yet the 14,500 acres of the Sinlahekin comprises less than 1/1000th of the land mass of Washington. By way of comparison, the Yakima Training Center (approximately 360,000 acres) has about 550 species of vasculars, and the Hanford Reservation at 600,000 acres has 725 species of vascular plants.

The rich species diversity of this Wildlife Area can be ascribed to the number of distinct habitat types within its boundaries, and to the presence of abundant wetlands in an otherwise semi-arid land.

Carex hystricina, porcupine sedge, one of 32 species of *Carex* on the Sinlahekin

There are approximately 140 species in the genus *Carex* known in the state of Washington. The 32 species present on the Sinlahekin account for 22% of the total in the state, a disproportionately large number given the very small area of the state that the SWA encompasses.

Seven species of the Sinlahekin's vascular plants are listed with the state Department of Natural Resource's Natural Heritage Program (NHP) as being rare in the state to some degree. Of these seven, one is listed as Threatened (for plant names and descriptions and definitions of NHP classifications see below), five are listed as Sensitive, and one is a Review species. A potential eighth Sensitive species awaits more taxonomic work. An additional two plant species were found on the Sinlahekin that are known to be rare in the state. They do not currently have a NHP classification but it is possible that they will in the future. Seven species of TES plants amounts to 2% of the state total of 360 listed species, again a disproportionately large number for such a small slice of the state's land mass.

It is reasonable to conclude that the Sinlahekin Wildlife Area contains within its boundaries a diverse assemblage of plants that far exceeds that which might be expected from its size.

Not all of the numbers resulting from the vegetation survey cast such positive light on the biological integrity of the Sinlahekin Wildlife Area. The 107 non-native species present comprise a whopping 19.5.% of the vascular flora of the Area. Furthermore, the actual percentage of total biomass produced by these weedy invaders in the most disturbed habitats can comprise 50% or more of the total productivity of those sites. While actual biomass measurements are outside the scope of this inventory, visual estimates clearly substantiate that particularly aggressive non-native species like cheat grass (*Bromus tectorum*) and Canada thistle (*Cirsium arvense*) dominate specific locales, if not entire habitats.

The large number of non-native species in the Sinlahekin is primarily due to the fact that most of the area was ranch land for the 50 years prior to its purchase by Washington Department of Game, and was heavily utilized by cattle in that time period. Portions of the SWA are much more recently acquired--and therefore remained privately held for an even longer period of time. And, parts of the Sinlahekin is still grazed today. Many studies have documented the relationship between heavy grazing and the introduction and spread of exotic plant species (see 'Livestock Grazing and Weed Invasions in the Arid West' in the Appendix for a list of references). Hunters and other tourists also serve as vectors for continuing spread of non-native plants. The suppression of natural ecological functions, most notably the absence periodic natural fire, superimposed on human-caused disturbance has doubtless exacerbated the fraying of habitat integrity and fostered greater invasibility by non-native plants.

Two views of Coulee Creek, below Doheny Lake. Cows had access to the site on the left, which was heavily trampled, but not to the site on the right, where a number of unusual wetland plants not seen elsewhere on the Sinlahekin were found.

Summary

In spite of the impacts of 100 years of grazing and the presence of a large number of non-native plant species, The Sinlahekin Wildlife Area retains a rich native flora, and serves as a refuge for up to ten plant species that are rare in the state. This species richness is valuable both for its biological diversity and its economic potential, in a society that is increasingly willing to pay to experience relatively natural environments. Giving priority to managing the Sinlahekin to protect and even restore its native flora may prove to be wiser over the long term than would managing first and foremost for multiple uses.

Protection of native plant (and animal) species does not necessarily mean an absence of disturbance, but rather it requires the presence of the ecological processes that the native biotic community has evolved with over time. Some of these processes, like the presence of periodic, low-intensity fire and the absence of heavy grazing, are well-known to land managers in the Department of Fish and Wildlife; and we simply add our voice in support of their utilization on the Sinlahekin in order to protect the native plant community.

Gibson Falls, near Fish Lake on the SWA

Cecil Creek, at the north end of the SWA

Key to Table of
Vascular Plants of the Sinlahekin

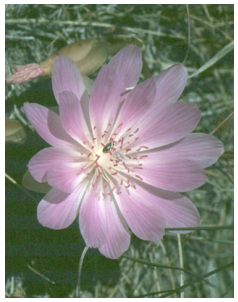
Abundance:
1= abundant in multiple habitats
2= common in multiple habitats
3= common in specific habitats
4= uncommon, present at 5 to 20 sites
5= rare, present at 5 or fewer sites

Alien?
Non-native species are marked with an 'A'

Type (growth form)
a= annual
aq= aquatic
cm= clubmoss
g= graminoid (grasses, sedges, rushes)
p= perennial
s= shrub
t= tree

Code
Nationally recognized code from USDA PLANTS database

Page
H= page in Hitchcock & Cronquist, *Flora of the Pacific Northwest*
D= page # in Douglas et al, *Illustrated Flora of British Columbia*



Lewisia rediviva
bitterroot

Vascular Plants of the Sinlahekin Wildlife Area

#	Scientific Name	Common Name	Abundance	Alien?	Type	Code	Page
1	Abies lasiocarpa	subalpine fir	5		t	ABLA	H61
2	Acer glabrum douglasii	Douglas maple	1		s	ACGLD4	H289
3	Achillea millefolium	common yarrow	1		p	ACMI2	H478
4	Actaea rubra	baneberry	5		p	ACRU2	H125
5	Adenocaulon bicolor	pathfinder	5		p	ADBI	H478
6	Agoseris heterophylla	annual agoseris	4		a	AGHE2	H478
7	Agropyron cristatum	crested wheatgrass	1	A	g	AGCR	H614
8	Agropyron intermedium	intermediate wheatgrass	3		g	AGIN2	H614
9	Agropyron repens	quackgrass	1	A	g	AGRE2	H615
10	Agropyron (Pseudoroegneria) spicatum	bluebunch wheatgrass	1		g	AGSPI	D258
11	Agrostis alba var alba	creeping bentgrass	4	A	g	AGALP	H617
12	Agrostis interrupta	bentgrass	1	A	g	AGIN4	H616
13	Alisma plantago-aquatica	American waterplantain	4		p	ALPA	H558
14	Allium cernuum	nodding onion	2		p	ALCE2	H682
15	Alnus incana	mountain alder	2		d	ALIN2	H72
16	Alopecurus aequalis	little meadow-foxtail	3	A	g	ALAE	H620
17	Alopecurus pratensis	meadow foxtail	3		g	ALPR3	H620
18	Amelanchier alnifolia v alnifolia	western serviceberry	1		s	AMALA	H208
19	Amsinckia menziesii	small-flowered fiddleneck	1		a	AMME	H386
20	Angelica arguta	sharptooth angelica	4		p	ANAR3	H320
21	Antennaria anaphaloides	tall pussytoes	4		p	ANAN2	H482
22	Antennaria dimorpha	low pussytoes	3		p	ANDI2	H481
23	Antennaria luzuloides	woodrush pussytoes	4		p	ANLU2	H482
24	Antennaria microphylla	rosy pussytoes	2		p	ANMI3	H481
25	Antennaria racemosa	raceme pussytoes	4		p	ANRA	H481
26	Antennaria umbrinella	umber pussytoes	4		p	ANUM	H481
27	Apocynum androsaemifolium	spreading dogbane	2		p	APAN2	H362
28	Apocynum sibiricum	Indian hemp	3		p	APSI	H362
29	Arabis glabra	tower mustard	4		a	ARGL	H152
30	Arabis holboellii	rockcress	3		p	ARHO2	H155
31	Arabis microphylla	littleleaf rockcress	3		p	ARMI	H153
32	Arceuthobium campylopodium	dwarf mistletoe	3		p	ARCA3	H77
33	Arceuthobium douglasii	dwarf mistletoe	3		p	ARDO	H77
34	Arctium minus	common burdock	1	A	p	ARMI2	H483
35	Arctostaphylos uva-ursi	kinnikinnick	4		p	ARUV	H342
36	Arenaria capillaris	thread-leaved sandwort	4		p	ARCA7	H113
37	Arenaria (Moeringia) lateriflora	bluntleaf sandwort	3		p	ARLA15	H111
38	Arenaria serpyllifolia	thyme-leaved sandwort	3		a	ARSE2	H111
39	Arnica cordifolia	heartleaf arnica	3		p	ARCO9	H485
40	Arnica sororia	twin arnica	2		p	ARSO2	H485
41	Arrhenatherum elatius	oatgrass	4	A	g	AREL3	H622
42	Artemisia ludoviciana var latiloba	prairie sage	5		p	ARAB3	H486
43	Artemisia campestris ssp borealis	Pacific sagebrush	4		p	ARCAB2	H487
44	Artemisia cana	silver sagebrush	4		p	ARCA13	H488
45	Artemisia dranunculus	tarragon	1	A	p	ARDR4	H487
46	Artemisia frigida	fringed sagebrush	1		s	ARFR4	H487
47	Artemisia michauxiana	Michaux artemisia	4		s	ARMI4	H486
48	Artemisia tridentata	big sagegrush	2		s	ARTR2	H488
49	Asclepias speciosa	showy milkweed	3		p	ASSP	H363
50	Asparagus officinalis	asparagus	4	A	a	ASOF	H685
51	Asperugo procumbens	catchweed	3	A	a	ASPR	H387
52	Aster campestris	western meadow aster	4		p	ASCA6	H491
53	Aster conspicuus	showy aster	2		p	ASCO3	H491
54	Aster foliaceus	leafy aster	3		p	ASFO	H493
55	Aster modestus	great northern aster	3		p	ASMO3	H492
56	Astragalus agrestis	purple milkvetch	2		p	ASAG2	H234
57	Astragalus canadensis var brevidens	Canada milkvetch	3		p	ASCAB	H231
58	Astragalus miser	weedy milkvetch	2		p	ASMI9	H231
59	Astragalus purshii	woolly-pod milkvetch	2		p	ASPU9	H238
60	Astagalus robbinsii	Robbin's milkvetch	5		p	ASRO	H251

61	Athyrium filix-femina	lady-fern	5		f	ATFI	H49
62	Atriplex canescens	hoary saltbush	5		s	ATCA2	H95
63	Atriplex patula var patula	spear orache	4		a	ATPAP	H95
64	Balsamorhiza sagittata	arrowleaf balsamroot	1		p	BASA3	H495
65	Barbarea orthoceras	American wintercress	4		p	BAOR	H156
66	Berberis aquifolium	hollyleaved barberry	1		s	BEAQ	H142
67	Berteroa incana	berteroa	5	A	a	BEIN2	H156
68	Berula erecta	cut-leaved water parsnip	3		p	BEER	H321
69	Betula occidentalis	water birch	3		t	BEOC2	H73
70	Brodiaea douglasii	douggies brodiaea	3		p	BRDO	H684
71	Bromus commutatus	hairy brome	3	A	g	BRCO4	H625
72	Bromus inermis var inermis	smooth brome	3	A	g	BRINI	H626
73	Bromus japonicus	Japanese brome	4	A	g	BRJA	H625
74	Bromus tectorum	cheatgrass	1	A	g	BRTE	H624
75	Calamagrostis canadensis	bluejoint reegrass	3		g	CACA4	H630
76	Calamagrostis rubescens	pinegrass	3		g	CARU	H628
77	Callitriche heterophylla	water starwort	3		p	CAHE3	H286
78	Calochortus lyallii	Lyall's Mariposa lily	4		p	CALY	H687
79	Calochortus macrocarpus	sagebrush Mariposa lily	3		p	CAMA5	H686
80	Camelina microcarpa	falseflax	4	A	a	CAMI2	H157
81	Capsella bursa-pastoris	sheperd's purse	4	A	a	CABU2	H157
82	Caragana arborescens	Siberian pea shrub	4	A	s	CAAR	NA
83	Cardamine pennsylvanica	Pennsylvania bittercress	3		a	CAAR18	H161
84	Cardaria draba	whitetop	4	A	p	CADR	H159
85	Carex amplifolia	big-leaf sedge	4		g	CAAM10	H583
86	Carex atherodes	awned sedge	3		g	CAAT2	H580
87	Carex athrostachya	slenderbeaked sedge	3		g	CAAT3	H592
88	Carex backii	Back's sedge	4		g	CABA3	H582
89	Carex bebbii	Bebb's sedge	3		g	CABE2	H595
90	Carex concinnoides	northwest sedge	4		g	CACO11	H581
91	Carex deweyana	Dewey's sedge	3		g	CADE9	H591
92	Carex diandra	panicled sedge	4		g	CADI4	H590
93	Carex disperma	two-seeded sedge	3		g	CADI6	H588
94	Carex douglasii	Douglas' sedge	3		g	CADO2	H589
95	Carex filifolia	thread-leaved sedge	3		g	CAFI	H579
96	Carex hoodii	Hood's sedge	4		g	CAHO5	H590
97	Carex hystericina	porcupine sedge	4		g	CAHY4	H581
98	Carex interior	interior sedge	4		g	CAIN11	H591
99	Carex lanuginosa	woolly sedge	3		g	CALA30	H582
100	Carex leporinella	hare sedge	3		g	CALE9	H594
101	Carex leptalea	bristle-stalked sedge	3		g	CALE10	H530
102	Carex microptera	small-winged sedge	3		g	CAMI7	H594
103	Carex nebrascensis	Nebraska sedge	4		g	CANE2	H587
104	Carex pachystachya	thick-headed sedge	3		g	CAPA14	H594
105	Carex petasata	Liddon's sedge	3		g	CAPE7	H593
106	Carex praegracilis	clustered field sedge	3		g	CAPR5	H589
107	Carex praticola	meadow sedge	3		g	CAPR7	H594
108	Carex raynoldsii	Raynold's sedge	5		g	CARA6	H584
109	Carex retrorsa	retrorse sedge	3		g	CARE4	H581
110	Carex rossii	Ross sedge	3		g	CARO5	H582
111	Carex scopulorum	rocky mountain sedge	3		g	CASC12	H588
112	Carex stipata	sawbeak sedge	3		g	CAST5	H590
113	Carex synchncocephala	many-headed sedge	4		g	CASY	H592
114	Carex utriculata	beaked sedge	3		g	CAUT	H581
115	Carex vallicola	valley sedge	3		g	CAVA3	H589
116	Carex vulpinoidea	fox sedge	4		g	CAVU2	H590
117	Castilleja miniata	scarlet Indian paintbrush	4		p	CAMI12	H420
118	Castilleja thompsonii	yellow paintbrush	3		p	CATH4	H417
119	Ceanothus velutinus	snowbrush ceanothus	3		s	CEVE	H290
120	Centaurea diffusa	diffuse knapweed	2	A	b	CEDI3	H498

122	Cerastium vulgatum	common chickweed	3		p	CEVU	H114
123	Chaenactis douglasii	hoary false-yarrow	3		p	CHDO	H500
124	Cheilanthes gracilima	lace lipfern	4		f	CHGR	H50
125	Chenopodium album	lambsquarters	3	A	a	CHAL7	H99
126	Chenopodium hybridum	maple-leaved goosefoot	3	A	a	CHHY	H98
127	Chimaphila umbellata	pipsissewa	4		p	CHUM	H343
128	Chorispora tenella	purple cross-flower	3	A	a	CHTE2	H160
129	Chrysothamnus naseosus	gray rabbitbrush	3		s	CHNA	H502
130	Cinna latifolia	woodreed	4		g	CILA2	H632
131	Clarkia pulchella	deer horn	4		p	CLPU	H305
132	Clarkia rhomboidea	common clarkia	3		p	CLRH	H305
133	Claytonia lanceolata	springbeauty	3		p	CLLA2	H105
134	Circaea alpina	enchanter's nightshade	4		p	CIAL	H304
135	Cirsium arvense	Canada thistle	1	A	p	CIAR4	H503
136	Cirsium undulatum	wavy-leaved thistle	3		p	CIUN	H504
137	Cirsium vulgare	bull thistle	4	A	a	CIVU	H503
138	Clematis ligusticifolia	western white clematis	3		s	CLLI2	H128
139	Collinsia parviflora	blue-eyed Mary	3		a	COPA3	H422
140	Collomia linearis	narrow-leaf collomia	3		a	COLI2	H368
141	Collomia grandiflora	large-flowered collomia	4		p	COGR4	H368
142	Convolvulus arvensis	field morning-glory	3	A	p	COAR4	H364
143	Corallorhiza maculata	spotted coralroot	4		p	COMA4	H700
144	Corallorhiza striata	striped coralroot	4		p	COST	H700
145	Cornus stolonifera	redosier dogwood	3		s	COST4	H339
146	Crataegus columbiana var columbiana	Columbia hawthorn	3		d	CRCOC	H210
147	Crataegus douglasii	Douglas hawthorn	4		d	CRDO2	H209
148	Crepis atribarba	slender hawksbeard	3		p	CRAT	H508
149	Crepis occidentalis	western hawksbeard	3		p	CROC	H509
150	Cryptantha torreyana	Torrey's cryptantha	3		a	CRTO4	H389
151	Cynoglossum officinale	common houndstongue	1	A	b	CYOF	H390
152	Cyperus aristatus	awned flatsedge	3		a	CYAR3	H596
153	Cypripedium calceolus (parviflorum)	yellow lady's-slipper	5		p	CYCA	H701
154	Cypripedium montanum	mounain lady's-slipper	5		p	CYMO2	H701
155	Cystopteris fragilis	brittle bladderfern	3		f	CYFR2	H50
156	Dactylis glomerata	orchardgrass	3	A	g	DAGL	H633
157	Delphinium burkei	meadow larkspur	4		p	DEBU	H131
158	Delphinium nuttallianum	Nuttall's larkspur	4		p	DENU2	H132
159	Descurainia richardsonii var viscosa	mountain tansymustard	3	A	a	DERIV2	H162
160	Descurainia richardsonii var sonnei	mountain tansymustard	4	A	a	DERIS	H161
161	Descurainia sophia	flixweed	4	A	a	DESO2	H161
162	Disporum hookeri	Hooker fairybell	4		p	DIHO3	H690
163	Disporum trachycarpum	Sierra fairybell	3		p	DITR2	H690
164	Dodecatheon cusickii	sticky shootingstar	3		p	DOCU2	H352
165	Dodecatheon dentatum	white shootingstar	4		p	DODE	H352
166	Dodecatheon pulchellum	shiny shootingstar	4		p	DOPU	H353
167	Draba verna	spring whitlowgrass	1		a	DRVE2	H163
168	Dracocephalum parviflorum	American dragonhead	4		p	DRPA2	H401
169	Elaeagnus angustifolia	Russian olive	3	A	d	ELAN	H302
170	Elaeagnus commutata	silverberry	4		s	ELCO	H302
171	Eleocharis bella	delicate spike-rush	3		g	ELBE	H598
172	Eleocharis palustris	common spike-rush	3		g	ELPA3	H598
173	Eleocharis rostellata	beaked spike-rush	5		g	ELRO2	H597
174	Elodea canadensis	Canada waterweed	3		aq	ELCA7	H560
175	Elymus cinereus	great basin wild rye	3		g	ELCI2	H637
176	Elymus glaucus	blue wild rye	3		g	ELGL	H638
177	Epilobium angustifolium	fireweed	3		p	EPAN2	H306
178	Epilobium minutum	small-flowered willow-herb	4		a	EPMI	H306
179	Epilobium palustre	swamp willow-herb	4		p	EPPA	H307
180	Equisetum arvense	field horsetail	3		p	EQAR	H449
181	Equisetum fluviatile	water horsetail	3		p	EQFL	H43
182	Equisetum hyemale	common scouring-rush	3		p	EQHY	H43

183	Equisetum laevigatum	smooth scouring-rush	3		p	EQLA	H43
184	Equisetum pratense	shady horsetail	3		p	EQPR	H43
185	Erigeron corymbosus	long-leaf fleabane	3		p	ERCO5	H519
186	Erigeron divergens	spreading fleabane	4		p	ERDI4	H519
187	Erigeron linearis	desert yellow daisy	3		p	ERLI	H517
188	Erigeron filifolius	thread-leaf fleabane	3		p	ERFI2	H518
189	Erigeron philadelphicus	philadelphia fleabane	3		p	ERPH	H515
190	Erigeron pumilus	shaggy fleabane	3		p	ERPU2	H520
191	Erigeron speciosus	showy fleabane	3		p	ERSP4	H515
192	Erigeron subtrinervis	three-veined fleabane	4		p	ERSU2	H515
193	Eriogonum heracleoides	big buckwheat	1		s	ERHE2	H80
194	Eriogonum niveum	snow buckwheat	3		p	ERNI2	H83
195	Erucastrum gallicum	dog mustard	4	A	a	ERGA	H167
196	Euphorbia serpyllifolia	thyme-leaved spurge	4	A	a	EUSE5	H285
197	Festuca (Vulpia) bromoides	six-weeks fescue	3	A	g	FEBR4.	H640
198	Festuca campestris	rough fescue	3		g	FECA4	D154
199	Festuca idahoensis	Idaho fescue	2		g	FEID	H642
200	Festuca (Vulpia) octoflora	slender fescue	3		g	FEOC3	H640
201	Festuca ovina	sheep fescue	2		g	FEOV	H642
202	Festuca subulata	bearded festuca	3		g	FESU	H641
203	Festuca trachyphylla	hard fescue	4		g	FETR3	D162
204	Fragaria virginiana	wild strawberry	3		p	FRVI	H211
205	Fritillaria pudica	yellowbell	3		p	FRPU2	H691
206	Galium bifolium	low mountain bedstraw	3		a	GABI	H449
207	Galium boreale	northern bedstraw	4		p	GABO2	H449
208	Galium triflorum	fragrant bedstraw	3		p	GATR3	H449
209	Gaillardia aristata	blanket-flower	4		p	GAAR	H521
210	Gayophytum diffusum	spreading groundsmoke	4		a	GADI2	H309
211	Geranium robertianum	Robert geranium	4	A	a	GERO	H280
212	Geranium viscossimum	sticky geranium	4		p	GEVI2	H280
213	Geum aleppicum	yellow avens	3		p	GEAL3	H212
214	Geum macrophyllum	large-leaved avens	3		p	GEMA4	H212
215	Geum triflorum	prairie smoke avens	3		p	GETR	H212
216	Gilia aggregata	scarlet gilia	3		p	GIAG	H369
217	Glyceria elata	tall mannagrass	3		g	GLEL	H644
218	Glyceria striata	fowl mannagrass	3		g	GLST	H643
219	Gnaphalium microcephalum	slender cudweed	3		p	GNMI	H523
220	Gnaphalium palustre	lowland cudweed	3		p	GNPA	H522
221	Gratiola neglecta	hedge hssop	4		p	GRNE	H424
222	Gymnocarpium dryopteris	oak fern	4		f	GYDR	H51
223	Gypsophila paniculata	baby's breath	5	A	p	GYPA	H114
224	Habenaria hyperborea	green bog-orchid	4		p	HAHY3	H704
225	Habenaria unalascensis	Alaska rein-orchid	4		p	HAUN	H702
226	Hackelia ciliata	Okanogan stickseed	3		p	HACI4	H392
227	Hackelia deflexa	nodding stickseed	3		a	HADE	H392
228	Hackelia micrantha	blue stickseed	3		p	HAMI	H392
229	Happlopappus carthamoides	Columbia goldenweed	3		p	HACA5	H526
230	Heracleum lanatum	cow parsnip	3		p	HELA4	H325
231	Heuchera cylindrica	roundleaf alumroot	3		p	HECY2	H187
232	Hieracium albiflorum	white-flowered hawkweed	3		p	HIAL2	H531
233	Hieracium cynoglossoides	houndstongue hawkweed	3		p	HICY	H531
234	Hippuris vulgaris	mare's-tail	3		aq	HIVU2	H313
235	Holodiscus discolor	oceanspray	3		s	HODI	H213
236	Hordeum jubatum	squirrel-tail	3		g	HOJU	H646
237	Hydrophyllum capitatum	ballhead waterleaf	3		p	HYCA4	H378
238	Hypericum perforatum	St. John's-wort	3	A	p	HYPE	H295
239	Iliamna rivularis	streambank globemallow	4		p	ILRI	H292
240	Iris pseudacorus	yellow iris	5	A	p	IRPS	H697
241	Iva xanthifolia	tall marsh-elder	3	A	a	IVXA	H533
242	Juncus balticus	Baltic rush	3		g	JUBA	H569
243	Juncus articulatus	jointed rush	3		g	JUAR4	H572

244	Juncus bufonius	toad rush	3		g	JUBU	H568
245	Juncus effusus	common rush	3		g	JUEF	H569
246	Juncus ensifolius	dagger-leaved rush	4		g	JUEN	H570
247	Juncus longistylis	long-styled rush	3		g	JULO	H574
248	Juncus torreyi	Torrey's rush	4		g	JUTO	H571
249	Juniperus communis	common juniper	3		s	JUCO6	H58
250	Juniperus scopulorum	Rocky Mountain juniper	5		t	JUSC2	H58
251	Kochia scoparia	red belvedere	3	A	a	KOSC	H100
252	Koeleria cristata	Junegrass	3		g	KOCR	H647
253	Lactuca pulchella	blue lettuce	4		p	LAPU	H534
254	Lactuca serriola	willow lettuce	3	A	a	LASE	H534
255	Lappula echinata	European stickseed	3	A	a	LAEC	H393
256	Lappula redowskii	western stickseed	3	A	a	LARE	H393
257	Larix occidentalis	Western larch	4		c	LAOC	H61
258	Lathyrus ochroleucus	cream-flowered peavine	3		p	LAOC2	H263
259	Lemna minor	duckweed	3		aq	LEMI3	H677
260	Lepidium densiflorum	prairie peppergrass	4		a	LEDE	H171
261	Lepidium perfoliatum	clasping peppergrass	3		a	LEPE2	H169
262	Leptodactylon pungens	prickly phlox	3		p	LEPU	H371
263	Lesquerella douglasii	Columbia bladderpod	3		p	LEDO2	H172
264	Lewisia rediviva	bitterroot	3		p	LERE7	H106
265	Ligusticum grayi	Gray's lovage	3		p	LIGR	H327
266	Lilium columbianum	tiger lily	3		p	LICO	H692
267	Linaria dalmatica ssp dalmatica	Dalmatian toadflax	4	A	p	LIDAD	H424
268	Linnaea borealis	twinflower	4		p	LIBO3	H451
269	Linum perenne	blue flax	3		p	LIPEL	H282
270	Lithophragma bulbifera	fringecup	2		a	LIBU2	H189
271	Lithophragma parviflorum	fingecup	2		a	LIPA5	H190
272	Lithospermum arvense	corn gromwell	4		a	LIAR4	H394
273	Lithospermum ruderale	western gromwell	3		p	LIRU4	H394
274	Lomatium ambiguum	swale desert parsley	3		p	LOAM	H328
275	Lomatium dissectum	wild carrot	4		p	LODI	H330
276	Lomatium macrocarpum	largefruit desert parsley	3		p	LOMA3	H333
277	Lomatium triternatum	nine-leaf lomatium`	3		p	LOTR2	H327
278	Lonicera involucrata	black twinberry	3		s	LOIN5	H451
279	Lonicera tartarica	tartarian honeysuckle	4	A	p	LOTA	NA
280	Lonicera utahensis	red twinberry	4		s	LOUT2	H451
281	Lupinus leucophyllus var leucophyllus	velvet lupine	3		p	LULEL4	H267
282	Lupinus polyphyllus	many-leaved lupine	4		p	LUPO2	H269
283	Lupinus sericeus	silky lupine	2		p	LUSE4	H266
284	Lychnis alba	white campion	4	A	p	LYAL	H115
285	Lycium halimifolium	matrimony vine	4	A	p	LYHA	H411
286	Lycopus americanus	bugleweed	3		p	LYAM	H403
287	Lycopus asper	rough bungleweed	3		p	LYAS	H403
288	Lysimachia ciliata	fringed loosestrife	4		p	LYCI	H354
289	Lysimachia thyrisiflora	tufted loosestrife	4		p	LYTH2	H354
290	Madia exigua	little tarweed	3		a	MAEX	H538
291	Madia gracilis	common tarweed	3		a	MAGR3	H538
292	Madia sativa	Chilie tarweed	4		a	MASA	H538
293	Malva neglecta	dwarf mallow	4	A	a	MANE	H292
294	Matricaria matricarioides	pineapple weed	3	A	a	MAMA11	H540
295	Medicago lupulina	black medic	3	A	p	MELU	H269
296	Medicago sativa	alfalfa	3	A	p	MESA	H269
297	Melica bulbosa	oniongrass	3		g	MEBU	H649
298	Melilotus albus	white clover	3	A	b	MEAL2	H270
299	Melilotus officinalis	yellow clover	3	A	b	MEOF	H270
300	Mentha arvensis	Canadian mint	3		p	MEAR4	H404
301	Mentha piperita	peppermint	4		p	MEPI	H405
302	Mentzelia albicaulis	white-stemmed mentzelia	4		a	MEAL6	H300
303	Mentzelia dispersa	small-flowered mentzelia	3		a	MEDI	H300
304	Mertensia longiflora	bluebells	3		p	MELO4	H395

305	Microsteris gracilis	pink-eyed Mary	3		a	MIGR	H372
306	Microseris nutans	nodding microseris	3		p	MINU	H540
307	Microseris troximoides	false agoseris	4		p	MITR5	H540
308	Mimulus floribundis	sticky monkeyflower	4		a	MIFL2	H427
309	Mimulus guttatus	yellow monkeyflower	3		p	MIGU	H427
310	Mitella pentandra	alpine mitrewort	4		p	MIPE	H190
311	Mitella trifida	three-tooth mitella	4		p	MITR4	H191
312	Montia linearis	narrow-leaved montia	3		a	MOLI4	H107
313	Montia sibirica	Siberian miner's lettuce	3		a	MOSI2	H108
314	Myosotis arvensis	field forget-me-not	3	A	a	MYAR	H396
315	Myosotis laxa	small-flowered forget-me-not	3		p	MYLA	H395
316	Myosotis micrantha	blue forget-me-not	4		p	MYMI	H396
317	Myosurus aristatus	sedge mouse-tail	4		a	MYAR3	H133
318	Myriophyllum spicatum	water-milfoil	3	A	aq	MYSP2	H313
319	Nemophila breviflora	Great Basin nemophila	3		a	NEBR	H379
320	Nepeta cataria	catnip	3	A	p	NECA2	H405
321	Opuntia fragilis	brittle cholla	3		p	OPFR	H301
322	Orobanche uniflora	naked broomrape	5		p	ORUN	H444
323	Osmorhiza chilensis	mountain sweet-cicely	3		p	OSCH	H335
324	Pachistima myrsinites	pachistima	3		s	PAMY	H288
325	Panicum capillare	common witchgrass	3	A	g	PACA6	H653
326	Parietaria pensylvanica	pellitory	5		a	PAPE	H76
327	Parthenocissus vitacea	Virginia creeper	4	A	p	PAVI5	NA
328	Pastinaca sativa	parsnip	4	A	b	PASA2	H335
329	Pectocarya linearis	winged combseed	3		a	PELIP2	H396
330	Pedicularis bracteosa	bracted lousewort	3		p	PEBR	H430
331	Penstemon confertus	yellow penstemon	3		p	PECO6	H437
332	Penstemon fruticosus	shrubby penstemon	3		p	PEFR3	H433
333	Penstemon pruinosus	Chelan penstemon	3		p	PEPR3	H440
334	Penstemon richardsonii	Richardson's penstemon	4		p	PERI	H434
335	Perideridia gairdneri	Gairdner's yampha	3		p	PEGA3	H336
336	Phacelia glandulifera	sticky phacelia	3	A	a	PHGL2	H382
337	Phacelia hastata	silverleaf phacelia	3		p	PHHA	H381
338	Phacelia linearis	threadleaf phacelia	3		a	PHLI	H382
339	Phalaris arundinacea	reed canarygrass	2	A	g	PHAR3	H654
340	Philadelphus lewisii	Lewis' mockorange	3		s	PHLE4	H204
341	Phleum pratense	timothy	3	A	g	PHPR3	H655
342	Phlox longifolia	long-leaved phlox	3		p	PHLO2	H374
343	Physocarpus malvaceus	mallow ninebark	4		s	PHMA5	H216
344	Picea engelmannii	Engelmann's spruce	4		t	PIEN	H61
345	Pinus contorta	lodgepole pine	5		t	PICO	H62
346	Pinus ponderosa	ponderosa pine	1		t	PIPO	H62
347	Plagiobothrys scouleri var scouleri	Scouler's popcornflower	3		a	PLSCS	H397
348	Plagiobothrys tenellus	slender popcorn flower	3		a	PLTE	H397
349	Plantago lanceolata	narrowleaf plantain	3	A	p	PLLA	H447
350	Plantago major	common plantain	3	A	p	PLMA2	H447
351	Plantago patagonica	Indian wheat	3		a	PLPA2	H447
352	Plectritis macrocera	white plectritis	3		a	PLMA4	H454
353	Poa annua	annual bluegrass	4	A	a	POAN	H656
354	Poa bulbosa	bulbous bluegrass	1	A	a	POBU	H658
355	Poa compressa	Canada bluegrass	3	A	p	POCO	H657
356	Poa nevadensis	Nevada bluegrass	3		p	PONE3	H663
357	Poa palustris	lake bluegrass	3		p	POPA2	H660
358	Poa pratensis	Kentucky bluegrass	3	A	g	POPR	H661
359	Poa secunda	Sandberg bluegrass	3		g	POSE	H663
360	Polygonum aviculare	doorweed	3	A	a	POAV	H88
361	Pologonum amphibium	water ladysthumb	3		aq	POAM8	H90
362	Polygonum convolvulus	bindweed	3	A	a	POCO10	H85
363	Polygonum lapathifolium	willow weed	3		p	POLA4	H87
364	Polygonum majus	wiry knotweed	3		p	POMA9	H87
365	Polygonum sawatchense	sawatch knotweed	4		a	POSA17	H88

366	Polygonum ramosissimum	yellow-flowered knotweed	3		a	PORA3	H86
367	Polypodium hesperium	licorice fern	4		f	POHE3	H50
368	Populus tremuloides	quaking aspen	3		t	POTR5	H64
369	Populus trichocarpa	black cottonwood	3		d	POTR15	H64
370	Potamogeton friesii	flat-stalked potamogeton	3		aq	POFR3	H564
371	Potamogeton natans	floating-leaved potamogeton	3		aq	PONA4	H565
372	Potamogeton pectinatus	fennel-leaved pondweed	3		aq	POPE6	H563
373	Potentilla anserina	silverweed	3		p	POAN5	H216
374	Potentilla argentea	silvery cinquefoil	3	A	p	POAR8	H220
375	Potentilla biennis	biennial cinquefoil	3		a	POBI7	H218
376	Potentilla glandulosa	sticky cinquefoil	3		p	POGL9	H216
377	Potentilla gracilis var flabelliformis	soft cinquefoil	3		p	POGRF	H218
378	Potentilla norvegica	Norwegian cinquefoil	4	A	p	PONO3	H217
379	Potentilla rivalis	brook cinquefoil	4		p	PORI3	H218
380	Prunus armeniaca	apricot	5	A	t	PRAR3	NA
381	Prunus besseyi	Western sandcherry	3	A	s	PRBE	NA
382	Prunus emarginata	bittercherry	3		s	PREM	H221
383	Prunus virginiana	common chokecherry	3		s	PRVI	H221
384	Pseudotsuga menziesii	Douglas fir	1		t	PSME	H63
385	Pteridium aquilinum	bracken fern	3		f	PTAQ	H54
386	Pterospora andromedea	pinedrops	4		p	PTAN2	H347
387	Purshia tridentata	antelope bitterbrush	1		s	PUTR2	H222
388	Pyrola minor	lesser wintergreen	5		p	PYMI	H347
389	Pyrola asarifolia	pink wintergreen	4		p	PYAS	H348
390	Pyrola chlorantha	green wintergreen	4		p	PYCH	H348
391	Pyrola secunda	sidebells pyrola	3		p	PYSE	H347
392	Pyrola uniflora	woodnymph	4		p	PYUN	H347
393	Pyrus malus	cultivated apple	5	A	t	PYMA	H222
394	Ranunculus aquatilis	white water buttercup	3		p	RAAQ	H136
395	Ranunculus flabellaris	yellow water buttercup	3		p	RAFL	H137
396	Ranunculus glaberrimus	sage buttercup	3		p	RAGL	H137
397	Ranunculus pennyslvanicus	bristly buttercup	4		p	RAPE2	H140
398	Ranunculus repens var repens	creeping buttercup	3	A	p	RARER	H139
399	Ranunculus sceleratus	celery-leaved buttercup	3		p	RASC3	H136
400	Ranunculus testiculatus	hornseed buttercup	4	A	a	RATE	H134
401	Rheum rhaponticum	rhubarb	5	A	p	RHRH	NA
402	Rhinanthus crista-galli	rattlebox	4		a	RHCR2	H440
403	Rhus (Toxicodendron) diversiloba	poison ivy	3		s	RHDI6	H287
404	Rhus glabra	western sumac	3		s	RHGL	H287
405	Ribes aureum	golden current	4		s	RIAU	H202
406	Ribes cereum	wax currant	3		s	RICE	H202
407	Ribes inerme	whitestem gooseberry	5		s	RIIN2	H201
408	Ribes hudsonianum	stinking current	3		s	RIHU	H203
409	Ribes lacustre	swamp current	3		s	RILA	H200
410	Ribes sativum	red current	5	A	s	RISA2	H203
411	Ribes viscosissimum	sticky current	4		s	RIVI3	H202
412	Rorippa islandica	marsh yellowcress	4		aq	ROIS	H175
413	Rorippa obtusa	bluntleaved yellowcress	4		a	ROOB	H174
414	Rorippa nasturtium-aquaticum	water-cress	3	A	aq	RONA2	H17
415	Rosa eglanteria	sweetbriar	3	A	s	ROEG	H223
416	Rosa nutkana	Nootka rose	3		s	RONU	H224
417	Rosa woodsii	Woods' rose	4		s	ROWO	H223
418	Rubus leucodermis	black raspberry	4		s	RULE	H226
419	Rubus parviflorus	thimbleberry	3		s	RUPA	H224
420	Rubus idaeus	red raspberry	3		s	RUID	H226
421	Rumex acetosella	sheep sorrel	3	A	a	RUAC3	H91
422	Rumex crispus	curly dock	2	A	p	RUCR	H92
423	Rumex occidentalis	western dock	3		p	RUOC3	H92
424	Salix alba var vitellina	golden willow	3	A	t	SAALV2	H66
425	Salix amygdaloides	peach-leaf willow	3		t	SAAM2	H66
426	Salix bebbiana	Bebb willow	3		s	SABE2	H71

427	Salix exigua	coyote willow	3		s	SAEX	H67
428	Salix geyeriana	Geyer's willow	3		s	SAGE2	H70
429	Salix maccalliana	MacCalla's willow	5		s	SAMA12	D36
430	Salix rigida var mackenzieana	Mackenzie willow	3		s	SARIM4	L69
431	Salix scouleriana	Scouler's willow	2		s	SASC	L70
432	Salsola kali	Russian thistle	3	A	a	SAKA	H101
433	Sambucus cerulea	blue elderberry	3		s	SACE3	H452
434	Sambucus racemosa	red elderberry	5		s	SARA2	H452
435	Sanguisorba minor	burnet	4	A	a	SAMI3	H226
436	Sanicula crassicaulis	Pacific sanicle	4		p	SACR2	H337
437	Sanicula marilandica	black snake-root	5		p	SAMA2	H337
438	Saponaria officinalis	bouncing bett	3	A	p	SAOF4	H116
439	Saxifraga arguta	brook saxifrage	3		p	SAAR13	H185
440	Saxifraga integrifolia var leptolepala	swamp saxifrage	3		p	SAINL2	H197
441	Saxifraga occidentalis var idahoensis	western saxifrage	3		p	SAOCI	H195
442	Saxifraga occidentalis var occidentalis	western saxifrage	3		p	SAOCO	H196
443	Schoenocrambe linifolia	plainsmustard	4		p	SCLI	H176
444	Scirpus acutus	bulrush	3		p	SCAC	H601
445	Scirpus microcarpus	panicled bulrush	3		p	SCMI2	H602
446	Scirpus olneyi	Olney's bulrush	4		p	SCOL	H601
447	Scutellaria galericulata	marsh skullcap	4		p	SCGA	H408
448	Sedum lanceolatum	spearleaf stonecrop	3		p	SELA	H183
449	Selaginella densa	compact clubmoss	3		cm	SEDE2	H41
450	Senecio indecorus	rayless mountain butterweed	3		p	SEIN	H547
451	Senecio integerrimus	western butterweed	3		p	SEIN2	H548
452	Senecio pauperculus	Canada butterweed	3		p	SEPA5	H547
453	Setaria lutescens	yellow bristlegrass	3	A	g	SELU4	H667
454	Silene antirrhina	sleepy cat	5	A	p	SIAN2	H117
455	Silene conoidea	conoid catchfly	4		p	SICO4	H117
456	Silene douglasii	Douglas silene	3		p	SIDO	H119
457	Silene menziesii	Menzie's silene	3		p	SIME	H118
458	Sitanion hystrix	squirreltail	3		g	SIHY	H668
459	Sium suave	hemlock water-parsnip	3		p	SISU2	H338
460	Sheperdia canadensis	buffaloberry, soopolallie	3		s	SHCA	H450
461	Sisymbrium altissimum	tall tumblemustard	3	A	a	SIAL2	H176
462	Sisymbrium loeselii	Loesel tumblemustard	3	A	a	SILO3	H176
463	Smilacina racemosa	raceme Solomon's seal	3		p	SMRA	H693
464	Smilacina stellata	star-flowered Solomon's seal	3		p	SMST	H693
465	Solanum dulcamara	bittersweet nightshade	1	A	p	SODU	H412
466	Solidago canadensis	goldenrod	3		p	SOCA6	H549
467	Sonchus arvensis	perennial sowthistle	3	A	p	SOAR2	H551
468	Sparganium emersum	simple-stem bur-reed	3		aq	SPEM2	H675
469	Spiraea betulifolia	white spirea	3		s	SPBE2	H227
470	Sporobolus cryptandrus	sand dropseed	3		g	SPCO4	H670
471	Stachys sp	hedge-nettle	4		p	STACH	H408
472	Stellaria calycantha	northern starwort	3		p	STCA	H122
473	Stellaria longipes	long-stalk starwort	3		p	STLO2	H121
474	Stellaria media	chickweed	3	A	a	STME2	H121
475	Stellaria nitens	shining chickweed	3		a	STNI	H121
476	Stephanomeria tenuifolia	rush-pink	4		p	STTE2	H552
477	Stipa comata	needle and thread grass	3		g	STCO4	H671
478	Stipa occidentalis	western needlegrass	3		g	STOC2	H671
479	Streptopus amplexifolius	twisted-stalk	4		p	STAM2	H694
480	Symphoricarpos albus	common snowberry	2		s	SYAL	H453
481	Symphoricarpos oreophilis	mountain snowberry	3		s	SYOR2	H453
482	Tamarix parviflora	tamarisk	5	A	s	TAPA4	H296
483	Taraxacum officinale	common dandelion	1	A	b	TAOF	H553
484	Thalictrum occidentale	western meadowrue	3		p	THOC	H140
485	Thlaspi arvense	field pennycress	3	A	a	THAR5	H179
486	Tragopogon dubius	yellow salsify	3	A	b	TRDU	H555
487	Trifolium pratense	red clover	3	A	p	TRPR2	H277

488	Trifolium repens	white clover	3	A	p	TRRE3	H276
489	Typha latifolia	common cattail	3		p	TYLA	H676
490	Urtica dioica	stinging nettle	2		p	URDI	H76
491	Ulmus pumila	Siberian elm	4	A	t	ULPU	H75
492	Utricularia vulgaris	bladderwort	3		aq	UTCA	H446
493	Vaccinium myrtillis	low blueberry	4		p	VAMY2	H349
494	Vaccinium scoparium	grouseberry	4		p	VASC	H349
495	Verbascum thapsus	common mullein	2	A	b	VETH	H442
496	Verbena bracteata	bracted verbena	3	A	a	VEBR3	H398
497	Veronica americana	American brooklime	3		p	VEAM2	H443
498	Veronica biloba	bilobed speedwell	3		a	VEBI2	H443
499	Veronica peregrina	purslane speedwell	3		a	VEPE2	H443
500	Vicia americana	American vetch	3		p	VIAM	H279
501	Vicia sativa	common vetch	4	A	p	VISA	H279
502	Viola adunca	early blue violet	3		p	VIAD	H298
503	Viola canadensis var rugulosa	Canada violet	4		p	VICAR	H297
504	Viola palustris	marsh violet	3		p	VIPA4	H297
505	Viola nuttallii var vallicola	valley yellow violet	3		p	VINUV2	H299
506	Vitus riparia	riverbank grape-vine	5	A	p	VIRI	H291
507	Woodsia oregana	woodsia	4		f	WOOR	H55
508	Woodsia scopulina	Rocky Mountain woodsia	3		f	WOSC	H55
509	Zigadenus elegans	elegant death-camas	4		p	ZIEL2	H696
510	Zigadenus venenosus	meadow death-camas	2		p	ZIVE	H697

A Preliminary Lichen List for the Sinlahekin Wildlife Area

#	Scientific Name	Habitat
1	Bryoria fuscescens	on rock outcrop
2	Cetraria platyphylla	PSME bark
3	Cladonia fimbriata	on soil in conifer forest
4	Cladonia multiformis	on mineral soil
5	Cladonia pyxidata	on rock
6	Dermatocarpon reticulatum	on rock
7	Diploschistes scruposes	on soil
8	Hypogymnia imshaugia	on PSME branch
9	Hypogymnia physodes	on rock
10	Lepraria neglecta	on soil over rock
11	Leptogium lichenoides	moss over rock
12	Leptochidium albociliatum	moss over rock
13	Letharia columbiana	on PSME branch
14	Letharia vulpina	on PSME branch
15	Nodobryoria abbreviata	on PSME branch
16	Parmelia hygrophila	on rock
17	Parmelia saxatilis	on rock
18	Parmelia sulcata	on birch bark
19	Pannaria praetermissa	on rock
20	Peltigera canina	on soil in conifer forest
21	Peltigera neckeri?	on soil
22	Peltigera rufescens	on soil
23	Peltigera venosa	on soil
24	Phaeophyscia decolor	on rock
25	Physcia biziana	on moss over rock
26	Phycia tenella	on bark
27	Platismatia glauca	on PSME branch
28	Pseudephoebe pubescens	on rock
29	Psora globifera	on rock
30	Rhizoplaca chrysoleuca	on rock
31	Rhizoplaca melanopthalma	on rock
32	Rhizoplaca peltata	on rock
33	Umbilicaria americana	on rock
34	Umbilicaria hyperborea	on rock
35	Umbilicaria phaea	on rock
36	Umbilicaria polyphyla	on rock
37	Vulpicida canadensis	on decidious tree bark
38	Vulpicida pinastri	on dead wood
39	Xanthoparmelia cumberlandia	on rock
40	Xanthroparmelia plittii	on rock
41	Xanthoria elegans	on rock
42	Xanthoria fallax	on bark

A Preliminary Moss List for the Sinlahekin Wildlife Area

#	Scientific Name	Habitat
1	Amblystegium serpens	on dead wood at creek
2	Amblystegium trichopodium	on rocks in creek
3	Atrichum selwynii	on disturbed mineral soil
4	Aulacomnium palustre	on rocks, soil at cr edge
5	Brachythecium albicans	on rock in forest
6	Brachythecium collinum-like	on bark of dead tree
7	Brachythecium frigidum	on rocks in creek
8	Brachythecium rivulare	on rocks in creek
9	Brachythecium salebrosum	on bark of dead tree
10	Bryum angustirete	on disturbed mineral soil
11	Bryum argenteum	on cliffs above Blue Lake
12	Bryum pallescens	on wet ground
13	Cratoneuron filicinum	on wet ground
14	Dicranum fuscescens	on decomposed wood on ground; PSME forest
15	Dicranum taricum	on dead wood along Sinlahekin Ck (dry wood)
16	Drepanocladus aduncus	on rock in creek
17	Grimmia montana	on dry rocks & cliffs
18	Gymnostomum aeruginosum	on wet rock
19	Homalothecium nevadense	on forest litter
20	Orthotrichum pulchellum	on bark of dead tree
21	Orthotrichum rupestre	on rock
22	Orthotrichum speciosum	on dead wood in riparian forest
23	Plagiomnium venustrum	on wet forest ground
24	Plagiothecium roseanum	on cliff near ephemeral seep
25	Pohlia drummondii	on wet ground
26	Polytrichum juniperum	on rock
27	Pterigynandrum filiforme	on rock on forest floor
28	Rhynchostegiella compacta	on calcareous soil along vernal stream
29	Rhytidiadelphus triquetrus	on forest floor
30	Timmia austriaca	on mineral soil in forest
31	Tortula princeps	on rock
32	Tortula ruralis	on disturbed mineral soil

Rare Plants of the Sinlahekin Wildlife Area

Of the 510 species of vascular plants identified on the Sinlahekin Wildlife Area, nine are rare in the state of Washington, while the final determination on a potential tenth species--*Carex tenera*-- awaits a more robust sample in the next flowering season to clarify its identity. These plants include the following:

1. *Astragalus robbinsii*- Robbin's milkvetch- unlisted
2. *Carex cordillerana* (aka C. *backii*)- mountain sedge, unlisted
3. *Carex sychnocephala*- many-headed sedge, state sensitive
4. *Carex tenera*- slender sedge, state sensitive, ID tentative
5. *Carex vallicola*- valley sedge, state sensitive
6. *Cypripedium parviflorum* (aka C. *calceolus*)- yellow lady's-slipper- state threatened
7. *Elocharis rostellata*- beaked spike-rush, state sensitive
8. *Opuntia fragilis*- brittle cholla, state review
9. *Salix maccalliana*- Macall's willow- state sensitive
10. *Sanicula marilandica*- black snake-root, state sensitive

Cypripedium parviflorum, yellow lady's-slipper

Information on each of these species is given in the pages that follow. Plants that are listed with the Washington Natural Heritage Program--the state office responsible for the stewardship of our botanical resources--are given a state status, a state rank, and a global rank. State status utilizes the terms that anyone who associates even peripherally with rare plants becomes familiar with, such as 'endangered', 'threatened' and 'sensitive', while state rank is a numerical system that is a constant in all fifty states. State status and rank should theoretically be comparable, and generally they are. Definitions for rank and status given in the text for each species are as follows:

State Status:
E= Endangered: Any taxon in danger of becoming extinct or extirpated from the state within the foreseeable future.
T= Threatened. Any taxon likely to become Endangered in Washington within the foreseeable future if population decline or habitat loss continue.
S= Sensitive. Any taxon that is vulnerable or declining and could become Endangered or Threatened in the state without active management or removal of threats.
R= Review. A taxon of potential concern, but for which no status has yet been assigned.

State Rank:
S1= Critically imperiled in the state because of extreme rarity or other factors; typically five or fewer occurrences in the state.
S2= Imperiled in the state because of rarity or other factors making it very vulnerable to extirpation; typically six to twenty occurrences).

Global Rank:
G1: Critically imperiled globally because of extreme rarity.
G2: Imperiled because of rarity or other factor making it vulnerable to extinction.
G3: Very rare and local throughout its range or found in a highly restricted range.
G4: Widespread, abundant, and apparently secure globally, though it may be imperiled

Astragalus robbinsii
Robbin's milkvetch
State status: none
State rank: none
Global rank: G5


Flower heads of *Astragalus robbinsii*

State Records: There is one record for Astragalus robbinsii at the University of Washington (UW) herbarium, for 'a few plants' at Cold Springs, 10.5 NW of Loomis.

Sinlahekin: There is one small 4'x4' patch of *Astragalus robbinsii* on the Sinlahekin, on the north side of Zachman Pond.

Management Concerns: Zachman Pond has been grazed only by trespass cattle since the 1980's. There are no plans to graze the area in the future. The species is rare in the state, and may be reviewed by the Natural Heritage Program for addition to the state's TES list.

Carex cordillerana
Mountain sedge
State status: none
State rank: none
Global rank: none


Carex cordillerana

State Records: Four records at the UW herbarium; one in Okanogan County (1934), two in Spokane County (1916 and 1927), the fourth unspecified.

Sinlahekin: This is a very rare plant on the Sinlahekin and in the state. On the SWA, a total of ten clumps of *Carex cordillerana* were found at the location noted on the site map, which is in the the flood channels carved into the alluvial fan of Sinlahekin Creek just north of Blue Lake.

Management Concerns: *Carex cordillerana* is listed as *Carex backii* in *The Flora of the Pacific Northwest*; the latter was split into two species in 2001. The plants on the Sinlahekin are in no evident immediate danger. As with *Astragalus robbinsii*, this species is a candidate for addition to the state TES list.

Carex synchnocephala
Many-headed sedge
State status: Sensitive
State rank: S2
Global rank: G4


Carex sychnocepala

State Records: Four records for *Carex sychnocephala* exist at the University of Washington herbarium, all from Okanogan County; two from 1989 and two from 1931. The Natural Heritage Program notes that there are less than ten known sites in Washington for the species.

Sinlahekin: Many-headed sedge was found in some abundance on the Sinlahekin Wildlife Area, with an estimated 1000+ plants occurring at four distinct sites (see site map).

Management Concerns: All of these sites are evaporative ponds that depend largely upon ground water for recharge. Thus they are quite vulnerable to drought, which would desiccate the ponds and highly alter the growing conditi-tons.

Carex tenera
slender sedge
State status: none
State rank: none
Global rank: G5


Carex tenera

State Records: There are no records for *Carex tenera* at the UW herbarium, although the species is known to occur in the state.

Sinlahekin: This species was infrequent in the hawthorn-dominated wetlands north of headquarters. In keying this species, it is difficult to split from a more common sedge, *C. brevior*, and for that reason a specimen was sent to the UW herbarium for inspection. Their response was, "The inflorescences look more like *Carex brevior* than *C. tenera*, but the nerving on the perigynia suggest the latter." A more mature specimen is needed from the next flowering season for an accurate assessment of this species.

Management Concerns: *Carex tenera* is rare in the west; it is a listed species in both Alberta and British Columbia, and is rarely reported in Washington. If further inspection shows the Sinlahekin plants to indeed to be *C. Tenera*, then two very rare species in Washington (the other being *Sanicula marilandica*) will cohabit the same area along the creek north of headquarters.

Carex Vallicola
Valley sedge
State status: S
State rank: S2
Global rank: G5


Carex vallicola

State Records: There are two records at the UW herbarium, both from Okanogan County (1931 and 1989).

Sinlahekin: In the Sinlahekin *Carex vallicola* is found in the shrub-steppe (especially in big-sagebrush-bluebunch wheatgrass) in the upper elevations of the Wildlife Area, at 4400 feet in one of the two outlier units to the east of the main valley. It is infrequent in the area it occurs.

Management Concerns: Valley sedge is quite rare in Washington, with the only current records in the state from Okanogan County. Being an herbaceous perennial, it is vulnerable to grazing and may need periodic fire to maintain adequate openings among woody shrubs.

Cypripedium parviflorum (syn calceolus)
Yellow lady's slipper
State status: T
State rank: S2
Global rank: G5


Cypripedium parviflorum

State Records: There are two records at the UW herbarium, one in Okanogan County (1932) and one in Spokane County (1889). Approximately twenty populations are now known in the state.

Sinlahekin: A small population of ten plants grows on disturbed ground near one of the lakes in the Sinlahekin; a larger population of 150 plants grows on a moderate to steep slope along a vernal stream near headquarters.

Management Concerns: *Cypripedium parviflorum* is a Threatened species in Washington. The larger population on the Sinlahekin is situated near unfenced private land that is frequently grazed by cows, although the steepness of the slopes in the area appear to be a deterrent to cows reaching the orchid site. The vernal stream appears to change channels frequently. Thus the site can not be considered secure, although the specimens present during the survey were thriving.

Eleocharis rostellata
Beaked spike-rush
State status: S
State rank: S2
Global rank: G5


Eleocharis rostellata

State Records: There are six records at the UW herbarium, including one in Okanogan County (1932), Yakima County (1994), Grant County (1935 and 1984), and Washington County (1927).

Sinlahekin: *Eleocharis rostellata* is found at only one site on the Sinlahekin, in a transitional ecotone between the wetlands associated with Coulee Creek, below Doheny Lake, and the adjacent semi-arid shrub-steppe. It grows in a rhizomatous mat in with other graminoids, in particular the non-native *Agrostis alba*, or redtop.

Management Concerns: The general area that this population is found in is favored by cows because of the proximity of the creek and the subirrigated nature of the site itself, which keeps plants green well into the summer. The competing redtop tends to overtop the spike-rush, and thus is probably supressing it somewhat.

Opuntia fragilis
Brittle cholla
State status: S?
State rank: R
Global rank: G5


Opuntia fragilis

State Records: Five records at the UW herbarium, one each in San Juan (1996), Whatcom (1939), Skagit (1936) Grant (1935), and Clallam (1931) counties.

Sinlahekin: *Opuntia fragilis* is found in several locations on the Sinlahekin.

Management Concerns: The primary site where *Opuntia fragilis* was observed was lightly disturbed by limited logging activity in the area. Some of the disturbed ground had been colonized by brittle cholla, which is very efficient at vegetative dispersal. The species appears to be secure on the Sinlahekin.

Salix maccallinan
Macall's willow
State status: S
State rank: S1
Global rank: G5

Salix maccallinana, drawing by Brayshaw in Catkin-Bearing Plants of British Columbia

State Records: There were no records for Washington state at the UW herbarium prior to specimens from this survey being sent there.

Sinlahekin: Only one small population of Macall's willow was encountered, in the wetlands just south of Conner Lake.

Management Concerns: This species has the second highest rating for rarity among the TES plants on the Sinlahekin, after yellow ladys-slipper. The S1 state rank for *Salix maccalliana* indicates 'critically imperiled in the state because of extreme rarity.' While much of the wetland area in the Sinlahekin is at least occasionally grazed, the Macall's willow site is not grazed.

Sanicula marilandica
Black snakeroot
State status: S
State rank: S2
Global rank: G5


Sanicula marilandica

State Records: There are no records for Washington on file at the UW herbarium.

Sinlahekin: Only two plants of this species were found on the Sinlahekin Wildlife Area itself, in the hawthorn-dominated wetlands north of headquarters. Three botanists returned to the area for further inspection but no more plants were located. At the southern end of the Sinlahekin, just 100 yards north of an old homestead building near the south boundary, a small population of twelve plants were found in a hawthorn thicket just west of the fenceline, placing them on private property.

Management Concerns: With a state rank of S2, *Sanicula marilandica* is 'imperiled in the state because of rarity,' with '6 to 20 occurrences.' In fact only two plants were actually found on the Sinlahekin. The 12 plants at the south end of the SWA were on private property that is heavily impacted by cattle.

Non-Native Plants of the Sinlahekin

107 species of non-native plants were recorded on the Sinlahekin Wildlife Area. Of these, none were listed as Class A weeds by the state Weed Board, seven are listed as state Class B weeds, eight are listed as Class C weeds, and there are three Monitor species. These designations are defined on page 24..

Okanogan County maintains its own Weed Board. Their information can be hard to utilize, as we found the classifications changed almost weekly, a number of species are listed in more than one category, and there are numerous mis-spellings and other irregularities at the site. Non-the-less they are the current local authority offered for invasive species.

The Okanogan County Weed Board shows no Class A weeds found in the Sinlahekin, one Class A-New Invader, one Class B-Designate Control, six Class B & C-Reduction weeds, and six Class B & C Suppression species. For the list of these species see page 27.

The only non-native species present on the Sinlahekin that either the local or state weed boards indicate there is any hope of immediate control is *Linaria dalmatica*, dalmatian toadflax. There are small populations at approximately twelve sites on the Sinlahekin (and addtional sites on the satellite parcels north and west of Fish Lake), and active control measures for the species are well underway.

All of the other classified non-natives found on the Sinlahekin (eleven species, see county weed list) are long-established plants for which there is little hope of eradication. Any effort to diminish the impact of these species--as well as the other 94 non-native species not classified at all including cheatgrass, *Bromus tectorum*) on native flora and fauna in the Sinlahekin, will require a return to the long-term ecological forces that shaped the current native flora.

Joy Belsky and Johathan Gelbard cite a number of studies in their research paper *Livestock Grazing and Weed Invasions in the Arid West* (see Appenxix III) that show that:

1. 80% of diffuse knapweed populations are found on lands predominantly used for livestock.

2. Some grazing systems recommended to discourage alien species such as rest-rotation and time-controlled grazing have been found to favor weed growth.

3. In one grazing season a single cow in a pasture in Alberta redistributed over 900,000 viable seeds, and that a single cow deposited an average of 37,000 viable seeds of late-season annuals in dung per day in the fall.

Cynoglossum officinale, houndstongue

4. The elimination of livestock grazing from grasslands and shrublands has often, but not always, been found to result in reduction in weed numbers

5. Any plan for restoring weed-dominated communities that fails to recognize and mitigate the impact of livestock grazing is unlikely to succeed. Preferential grazing of native plant species over non-indigenous species by livestock, combined with livestock's disturbances of soils, microbiotic crusts, mycorrhizae, nutrients, and fire cycles, will likely keep these communities open to invasion and prevent community recovery.

Another study, published in the *Journal of Range Management* in May 1997 titled "Cattle as dispersers of hound's-tongue on rangeland in southeastern British Columbia" (see Appendix III for Abstract) showed that there is little or no hope of eradicating houndstongue without addressing the issue of transport of the barbed seeds by cattle.

Some of the 107 non-native species found on the Sinlahekin are widespread and abundant in the Wildlife Area. As noted elsewhere in this report, it is not uncommon to find non-native species to be the dominant plants in some microsites and habitats (the most abundant non-native species, with abundance ratings of '1' and '2', can be found in the Sinlahekin species list and in a separate non-native list). Any effort in the future to diminish the quantity of non-native plant species in the Sinlahekin will require a decrease of non-native disturbance regimes and a return of natural ecological functions.

Kochia scoparia, red belevedere,
a 'Class B' weed in Washington

Guide to Weed Classes in Table:
Non-native Vascular Plants
of The Sinlahekin Wildlife Area

Washington State Weed Classification System

Class A: Class A weeds are non-native species with a limited distribution in the state. Eradication of all Class A weeds is required by state law. No Class A weeds were encountered on the Sinlahekin.

Class B: These species are established in some regions of Washington, but are of limited distribution or not present in other regions of the state. Because of differences in distribution, treatment of Class B weeds varies between regions of the state. In regions where a Class B is unrecorded or of limited distribution, prevention of seed production is required. In these areas, the weed is a "Class B designate," meaning it is designated for control by state law. In regions where a Class B species is already abundant or widespread, control is a local option. In these areas the weed is a "Class B non-designate," with containment, gradual reduction, and prevention of further spread being the chief goals.

Class C: Each species is already widely established in Washington or is of special interest to the state's agricultural industry. Placement on the state noxious weed list allows counties to enforce control if locally desired. Other counties may choose simply to provide education or technical consultation to county residents. Canada thistle, a Class C noxious weed, illustrated the desirability of a law that provides local flexibility. This species is widely established in Washington, and most counties prefer to provide technical consultation to landowners on methods of suppression and control. Enforcement of control is the preferred policy, however, in those counties which have crops grown for certified seed.

Monitor: The purpose of the Monitor List is to gather more information on suspect weeds, as well as monitor for occurrence, or spread. Information collected may be used to justify future inclusion on the state noxious weed list. There is no legal or regulatory aspect to this list. Reasons for inclusion on monitor list:
1. There is reason to believe this species is invasive or poses a potential threat to Washington.
2. The species exists in an adjacent state or province or occurs on an adjacent state or province’s noxious weed list and is not known from Washington.
3. Additional information is needed on distribution, abundance or biology. Need to verify existence (site investigation), verify identification, and/or obtain voucher specimen.
4. Species was once present in Washington and on the State Noxious Weed List and is now being monitored for reoccurrence.

Bromus tectorum
cheatgrass

Key to Non-native Vascular Plant List

Abundance:
1= abundant in multiple habitats
2= common in multiple habitats
3= common in specific habitats
4= uncommon, present at 5 to 20 sites
5= rare, present at 5 or fewer sites

Habitat: See pages 32-34
BB= bitterbrush
GL= grassland
SS1= shrub-steppe 1
SS2= shrub-steppe 2
WL1= wetland 1
WL2= wetland 2
WL3= wetland 3
WL4= wetland 4
WL5= wetland 5

Class: See page 26
Class A= eradication required by law
Class B= control optional
Class C= species long & widely established
Monitor= more information needed

Type:
a= annual
aq= aquatic
b= biennial
g= grass
p= perennial
s= shrub
t= tree

Non-native Vascular Plants of the Sinlahekin Wildlife Area

#	Scientific Name	Common Name	Abundance	Class	Type	Code	Page
1	Agropyron cristatum	crested wheatgrass	1		g	AGCR	H614
2	Agropyron repens	quackgrass	1		g	AGRE2	H615
3	Agrostis alba var alba	creeping bentgrass	4		g	AGALP	H617
4	Agrostis interrupta	bentgrass	1		g	AGIN4	H616
5	Alopecurus aequalis	little meadow-foxtail	3		g	ALAE	H620
6	Arctium minus	common burdock	1		p	ARMI2	H483
7	Arrhenatherum elatius	oatgrass	4		g	AREL3	H622
8	Artemisia dranunculus	tarragon	1		p	ARDR4	H487
9	Asparagus officinalis	asparagus	4		a	ASOF	H685
10	Asperugo procumbens	catchweed	3		a	ASPR	H387
11	Berteroa incana	berteroa	5		a	BEIN2	H156
12	Bromus commutatus	hairy brome	3		g	BRCO4	H625
13	Bromus inermis var inermis	smooth brome	3		g	BRINI	H626
14	Bromus japonicus	Japanese brome	4		g	BRJA	H625
15	Bromus tectorum	cheatgrass	1		g	BRTE	H624
16	Camelina microcarpa	falseflax	4		a	CAMI2	H157
17	Capsella bursa-pastoris	sheperd's purse	4		a	CABU2	H157
18	Caragana arborescens	Siberian pea shrub	4		s	CAAR	NA
19	Cardaria draba	whitetop	4	Class C	p	CADR	H159
20	Centaurea diffusa	diffuse knapweed	2	Class B	b	CEDI3	H498
21	Centaurea repens	Russian knapweed	2	Class B	p	CERE6	H499
22	Chenopodium album	lambsquarters	3		a	CHAL7	H99
23	Chenopodium hybridum	maple-leaved goosefoot	3		a	CHHY	H98
24	Chorispora tenella	purple cross-flower	3		a	CHTE2	H160
25	Cirsium arvense	Canada thistle	1	Class C	p	CIAR4	H503
26	Cirsium vulgare	bull thistle	4	Class C	a	CIVU	H503
27	Convolvulus arvensis	field morning-glory	3	Class C	p	COAR4	H364
28	Cynoglossum officinale	common houndstongue	1	Class B	b	CYOF	H390
29	Dactylis glomerata	orchardgrass	3		g	DAGL	H633
30	Descurainia richardsonii var viscosa	mountain tansymustard	3		a	DERIV2	H162
31	Descurainia richardsonii var sonnei	mountain tansymustard	4		a	DERIS	H161
32	Descurainia sophia	flixweed	4		a	DESO2	H161
33	Elaeagnus angustifolia	Russian olive	3		d	ELAN	H302
34	Erucastrum gallicum	dog mustard	4		a	ERGA	H167
35	Euphorbia serpyllifolia	thyme-leaved spurge	4		a	EUSE5	H285
36	Festuca (Vulpia) bromoides	six-weeks fescue	3		g	FEBR4.	H640
37	Geranium robertianum	Robert geranium	4	Class B	a	GERO	H280
38	Gypsophila paniculata	baby's breath	5	Class C	p	GYPA	H114
39	Hypericum perforatum	St. John's-wort	3	Class C	p	HYPE	H295
40	Iris pseudacorus	yellow iris	5	Class C	p	IRPS	H697
41	Iva xanthifolia	tall marsh-elder	3		a	IVXA	H533
42	Kochia scoparia	red belvedere	3	Class B	a	KOSC	H100
43	Lactuca serriola	willow lettuce	3		a	LASE	H534
44	Lappula echinata	European stickseed	3		a	LAEC	H393
45	Lappula redowskii	western stickseed	3		a	LARE	H393
46	Linaria dalmatica ssp dalmatica	Dalmatian toadflax	4	Class B	p	LIDAD	H424
47	Lonicera tartarica	tartarian honeysuckle	4		p	LOTA	NA
48	Lychnis alba	white campion	4		p	LYAL	H115
49	Lycium halimifolium	matrimony vine	4		p	LYHA	H411
50	Malva neglecta	dwarf mallow	4		a	MANE	H292
51	Matricaria matricarioides	pineapple weed	3		a	MAMA11	H540
52	Medicago lupulina	black medic	3		p	MELU	H269
53	Medicago sativa	alfalfa	3		p	MESA	H269
54	Melilotus albus	white clover	3		b	MEAL2	H270
55	Melilotus officinalis	yellow clover	3		b	MEOF	H270
56	Myosotis arvensis	field forget-me-not	3		a	MYAR	H396
57	Myriophyllum spicatum	water-milfoil	3		aq	MYSP2	H313
58	Nepeta cataria	catnip	3		p	NECA2	H405
59	Panicum capillare	common witchgrass	3		g	PACA6	H653
60	Parthenocissus vitacea	Virginia creeper	4		p	PAVI5	NA

61	Pastinaca sativa	parsnip	4		b	PASA2	H335
62	Phacelia glandulifera	sticky phacelia	3		a	PHGL2	H382
63	Phalaris arundinacea	reed canarygrass	2	Class C	g	PHAR3	H654
64	Phleum pratense	timothy	3		g	PHPR3	H655
65	Plantago lanceolata	narrowleaf plantain	3		p	PLLA	H447
66	Plantago major	common plantain	3		p	PLMA2	H447
67	Poa annua	annual bluegrass	4		a	POAN	H656
68	Poa bulbosa	bulbous bluegrass	1		a	POBU	H658
69	Poa compressa	Canada bluegrass	3		p	POCO	H657
70	Poa pratensis	Kentucky bluegrass	3		g	POPR	H661
71	Polygonum aviculare	doorweed	3		a	POAV	H88
72	Polygonum convolvulus	bindweed	3		a	POCO10	H85
73	Potentilla argentea	silvery cinquefoil	3	Monitor	p	POAR8	H220
74	Potentilla norvegica	Norwegian cinquefoil	4		p	PONO3	H217
75	Prunus armeniaca	apricot	5		t	PRAR3	NA
76	Prunus besseyi	Western sandcherry	3		s	PRBE	NA
77	Pyrus malus	cultivated apple	5		t	PYMA	H222
78	Ranunculus repens var repens	creeping buttercup	3		p	RARER	H139
79	Ranunculus testiculatus	hornseed buttercup	4		a	RATE	H134
80	Rheum rhaponticum	rhubarb	5		p	RHRH	NA
81	Ribes sativum	red current	5		s	RISA2	H203
82	Rorippa nasturtium-aquaticum	water-cress	3	Monitor	aq	RONA2	H17
83	Rosa eglanteria	sweetbriar	3		s	ROEG	H223
84	Rumex acetosella	sheep sorrel	3		a	RUAC3	H91
85	Rumex crispus	curly dock	2		p	RUCR	H92
86	Salix alba var vitellina	golden willow	3		t	SAALV2	H66
87	Salsola kali	Russian thistle	3		a	SAKA	H101
88	Sanguisorba minor	burnet	4		a	SAMI3	H226
89	Saponaria officinalis	bouncing bett	3		p	SAOF4	H116
90	Setaria lutescens	yellow bristlegrass	3		g	SELU4	H667
91	Silene antirrhina	sleepy cat	5		p	SIAN2	H117
92	Sisymbrium altissimum	tall tumblemustard	3		a	SIAL2	H176
93	Sisymbrium loeselii	Loesel tumblemustard	3		a	SILO3	H176
94	Solanum dulcamara	bittersweet nightshade	1		p	SODU	H412
95	Sonchus arvensis	perennial sowthistle	3	Class B	p	SOAR2	H551
96	Stellaria media	chickweed	3		a	STME2	H121
97	Tamarix parviflora	tamarisk	5		s	TAPA4	H296
98	Taraxacum officinale	common dandelion	1		b	TAOF	H553
99	Thlaspi arvense	field pennycress	3		a	THAR5	H179
100	Tragopogon dubius	yellow salsify	3		b	TRDU	H555
101	Trifolium pratense	red clover	3		p	TRPR2	H277
102	Trifolium repens	white clover	3		p	TRRE3	H276
103	Ulmus pumila	Siberian elm	4		t	ULPU	H75
104	Verbascum thapsus	common mullein	2		b	VETH	H442
105	Verbena bracteata	bracted verbena	3	Monitor	a	VEBR3	H398
106	Vicia sativa	common vetch	4		p	VISA	H279
107	Vitis riparia	riverbank grape-vine	5		p	VIRI	H291

Okanogan County Weed Board Species List

Species present on the Sinlahekin Wildlife Area
are marked with an asterisk.

Class A Noxious Weeds: Class A shall consist of those noxious weeds not native to the State that are of limited distribution or are unrecorded in our State and pose a serious threat to the State.

Abutilon theophrasti	velvetleaf
Centaurea macrocephala	bighead knapweed
Hieracium aurantiacum	orange hawkweed
Hieracium caespitosum	meadow hawkweed
Mirabilis nyctaginea	wild four o'clock
Solanum rostratum	buffalobur
Thymelaea passerina	spurge flax
Zygophyllum fabago	Syrian bean caper

Class A New Invaders: Those Noxious Weeds that have not been recognized by the State Weed Board as being a Class A Weed, that are new and/or established, which pose a very serious threat.

Carduus nutans	musk thistle
Centaurea solstitalis	yellow starthistle
Hieracium aurantiacum	orange hawkweed
Hieracium caespitosum	meadow hawkweed
Leucanthemum vulgare	oxeye daisy
*Linaria dalmatica	dalmation toadflax
Linaria vulgaris	yellow toadflax
Mirabilis nyctaginae	wild four o'clock
Onopordum acanthium	scotch thistle
Polygonum cuspidatum	Japanese knotweed
Senecio jacobaea	tansy ragwort
Thymelaea passerina	spurge flax

Class B Designate Control: Control is defined as the prevention of all seed production within a single program year.

Carduus nutans	scotch thistle
Euphorbia escula	leafy spurge
*Linaria dalmatica	dalmatian toadflax
Onopordum acanthium	Scotch thistle

Class B & C Reduction: Weeds listed in this category are too widespread to be immediately controlled or eradicated Countywide.

*Cardaria draba	whitetop
Cenchrus longispinus	longspine sandbur
*Centaurea diffusa	diffuse knapweed
Centaurea maculosa	spotted knapweed
*Centaurea repens	Russian knapweed
*Cynoglossum officinale	houndstongue
*Hypericum perforatum	St. Johnswort
Linaria vulgaris	yellow toadflax
Potentilla recta	sulfur cinquefoil
*Sonchus arvensis	sowthistle

Class B & C Supression: Weeds listed in this category are so widely disseminated that prevention of seed production within a single season is not practical. Nonetheless the species in the category are noxious weeds, and landowners are encouraged to control them.

*Centaurea diffusa	diffuse knapweed
*Cirsium arvense	Canada thistle
*Gypsophila paniculata	babysbreath
*Kochia scoparia	red belvedere
*Salsola kali (aka iberica)	Russian thistle
Tribulus terrestris	punctureviine
*Verbascum thapsus	mullein
Xanthium spionosum	cocklebur

For more information on county weed classification
and lists see http://okanogancounty.org/nw/index.htm

Sinlahekin Plant Communities

The Sinlahekin's unusual plant diversity exists because of the high degree of habitat diversity in the Wildlife Area. These habitats--forest, steppe, wetlands, cliffs-- can be further broken down and defined by the plant communities they support, although such designations are always static generalizations about a dynamic landscape. The major plant communities of the Sinlahekin are defined below. Where possible they follow communities described by Franklin and Dyrness in *Natural Vegetation of Oregon and Washington* (wetland associations are largely absent from their work), and quoted passages below are from that book.

Shrub-steppe notes from Franklin and Dyrness: "Man has wrought massive changes in the steppe vegetation of the Northwest by the cultivation, animals, and plants he introduced....overgrazing was considered a serious problem more than 60 years ago."

"Two of the major shrub species, *Artemisia tridentata* and *Purshia tridentata*, are fire sensitive and can be temporarily eliminated from a site by burning."

"Most of the major large perennial grasses, e.g., *Agropyron spicatum* and *Festuca idahoensis*, are not adapted to heavy grazing by ungulates. They evolved in an environment in which such animals were sparsely represented. They rarely recover to their former status after severe overgrazing but are relatively insensitive to fire."

Wetland 1 (WL1): *Crataegus douglasii*/*Betula occidentalis* (Douglas hawthorn/water birch). This community is fairly abundant along Sinlahekin Creek between Conner Lake and the north boundary of the Area, and it appears periodically south of there, becoming common again south of Doheny Lake. "*Crataegus* associations have been profoundly affected by human activities. Cattle heavily graze the major shrubs and herbs....as a consequence, little remains of these types." This association is certainly heavily impacted by grazing in the Sinlahekin, with many non-native species present. Non-the-less the native components are still present and a reduction in grazing would probably improve the ecological condition. Rare plants found in this community include *Sanicula marilandica* and *Carex tenera* (the latter a pending ID).

Weed species with a high abundance rating in WL1 include *Arctium minus* (common burdock), *Cirsium arvense* (Canada thistle), *Cynoglossum officinale* (common houndstongue), and *Solanum dulcamara* (bittersweet nightshade).

Wetland 2 (WL2): ALIN2/BEOC2, *Alnus incana*/*Betula occidentalis* (mountain alder/water birch). The dominant wetland community between Conner Lake and Blue Lake along Sinlahekin Creek. This community should be counted as one of the treasures of the Sinlahekin, as water birch has been decimated along much of the east slope of the Cascades for its firewood value. The loss of water birch is a possible factor in the decline of sharp-tailed grouse on the east slope, as the birch buds were a critical winter food for this species. *Salix maccalliana*, Macall's willow, is found in this community in the Sinlahekin. This species may be the rarest plant in the state encountered during these vegetation surveys, with less than five sites known. Much of the understory of this community is heavily colonized by *Solonum dulcamara* (bittersweet nightshade) and *Urtica dioca* (nettles)--the latter a native plant but an aggressive weedy increaser.

Weed species with a high abundance rating in WL2 include *Arctium minus* (common burdock) and *Solanum dulcamara* (bittersweet nightshade).

Wetland 3 (WL3): GRASS-SEDGE communities, species vary. The most abundant grasses in these subirrigated meadows along the creek are non-natives: *Agrostis alba* (redtop) and *Poa pratensis* (Kentucky bluegrass). Primary sedges include *C arex utriculata* (beaked sedge) and *Carex*

athrostachya (slender-beaked sedge). The noxious non-natives *Cirsium arvense* (Canada thistle) and *Centaurea repens* (Russian knapweed) can be dominant in this community. The TES species *Eleocharis rostellata* is found in this community.

Weed species with a high abundance rating in WL3 include *Agropyron repens* (quackgrass), *Agrostis interrupta* (bentgrass), *Centaurea repens* (Russian knapweed), *Cynoglossum officinale* (common houndstongue), *Phalaris arundinacea* (reed canarygrass), *Rumex crispus* (curly dock), and *Taraxacum officinale* (dandelion).

Wetland 4 (WL4): lakeshore communities, species vary. *Salix exigua* (coyote willow) and *Phalaris arundinacea* (reed canarygrass) are two typical dominants. The TES species *Carex sychnocephala* and the rare *Astragalus robbinsii* are found in this habitat.

Weed species with a high abundance rating in WL4 include *Phalaris arundinacea* (reed canarygrass) and *Rumex crispus* (curly dock).

Wetland 5 (WL5): upland creek communities, species vary. *Alnus incana* (mountain alder/*Cornus stolonifera* (red-oiser dogwood) are often dominants. Many creeks that tumble in to the valley from the hills above are temporal--they are dry by August. The larger of the two populations of *Cypripedium parviflorum* (yellow lady's-slipper) known on the Sinlahekin is found in this community.

Weed species with a high abundance rating in WL5 include *Cynoglossum officinale* (common houndstongue) and *Taraxacum officinale* (dandelion).

Bitterbrush (BB):*Purshia tridentata/Agropyron spicatum* (bitterbrush/bluebunch wheatgrass) and *Purshia tridentata/Stipa comata* (bitterbrush/needle-and-thread grass). *Stipa comata* is a native increaser species under grazing pressure, and may have supplanted *Agropyron spicatum* and *Festuca idahoensis* (Idaho fescue) as the dominant grass in this and the following community after years of heavy grazing; or it may reflect highly permeable soils. *Opuntia fragilis* is found in this community.

The weed species given a high abundance rating in BB include *Bromus tectorum* (cheatgrass) and *Poa bulbosa* (bulbous bluegrass).

Sagebrush (SB1): *Artemesia tridentata*/*Stipa comata (*sagebrush/needle-and-thread grass). The TES species *Carex vallicola* is found in this community.

The weed species given a high abundance rating in SB1 include *Bromus tectorum* (cheatgrass) and *Poa bulbosa* (bulbous bluegrass).

Serviceberry (SB2): *Amelanchier alnifolia*/*Festuca idahoensis* (serviceberry/Idaho fescue). Aerial photos from 1950 and the present clearly show an increase in serviceberry-dominated shrub-steppe over the past 50 years, probably due to fire suppression.

The weed species given a high abundance rating in SB1 include *Bromus tectorum* (cheatgrass) and *Poa bulbosa* (bulbous bluegrass).

Bunchgrass (G): *Agropyron spicatum*(bluebunch wheatgrass)/*Balsamorrhiza sagitata* (balsamroot). A bunchgrass-dominated community notable for the absence of woody shrubs and for a abundance of herbaceous perennials exists on the hills just below (southwest of) Zachman Pond .

Shrub-steppe 1 (SS1): *Eriogonum heracloides*/*Lupinus serecious* (buckwheat/silky lupine). This and the following lupine-dominated communities appear to be mid-seral stages of a transition back to native species from very heavy disturbance in the past . Some of these habitats were plowed for crops in the past, and others are in transition from recent *Centaurea diffusa* (diffuse knapweed) dominance.

The weed species given a high abundance rating in SB1 include *Bromus tectorum* (cheatgrass) and *Poa bulbosa* (bulbous bluegrass).

Shrub-steppe 2 (SS2): *Artemisia dranunculus/Lupinus serecious* (tarragon/silky lupine). See remarks in the community above. *Artemisia dranunculus* is a non-native species. This community is widespread in the heavily disturbed valley bottom in the Sinlahekin.

The weed species given a high abundance rating in SB1 include *Agropyron cristatum* (crested wheatgrass), *Agropyron repens* (quackgrass), *Bromus tectorum* (cheatgrass), *Agrostis alba* (creeping bentgrass), *Artemisia dranunculus* (tarragon), *Bromus tectorum* (cheatgrass), *Centaurea diffusa* (diffuse knapweed), and *Verbascum thapsus* (mullein).

Grass-dominated dryland communities, species vary (G): *Festuca ovina* (sheep fescue), *Stipa comata* (needle-and-thread grass) and *Agropyron spicatum* (bluebunch wheatgrass) are the most common dominants.

The weed species given a high abundance rating in SB1 include *Bromus tectorum* (cheatgrass) and *Poa bulbosa* (bulbous bluegrass).

Rocks & Cliffs (ROCK): An abundant habitat in the Sinlahekin. Species vary, typical shrubs include *Philadelphus lewisii* (mockorange), *Ribes cereum* (wax current) and *Amelanchier alnifolia* (serviceberry).

No abundant weeds in this habitat.

Pine (P): PIPO/STCO4, *Pinus ponderosa/Stipa comata* (ponderosa pine/needle-and-thread-grass). Ponderosa pine has visibly lost ground to Douglas fir in the upland forests, and *Stipa* may have supplanted *Agropyron spicatum* as the dominate grass due to selective grazing. Alternately, the dominance of *Stipa* may reflect a dry soil type. GIS maps utilize codes P1, P2, P3 and P4 to indicate low, medium, and high areas of fuel loading, with P4 designating rocky cliffs and benches dominated by pondersosa pine.

No abundant weeds in this habitat.

Douglas fir(DF) : PSME/SYAL, *Pseudotsuga menziesii*/*Symphoricarpos albus* (Douglas fir) common snowberry). Probably the least altered community on the Sinlahekin in terms of species composition, with relatively few non-native species (which are often poorly adapted to forest shading). Interestingly it may be the most dramatically altered community in terms of age structure and dominance, as logging has resulted in younger trees and a species shift from ponderosa to Douglas fir. GIS maps utilize codes D1, D2, D3 and D4 to indicate areas with low, medium and high levels of fuel loading, with D4 designating steep, rocky slopes and heavy fuel loading.

No abundant weeds in this habitat

Appendices

I: Wildlife Information

II. Rare Plant Locations & Supplemental Information

III: Supplementary Non-native Plant Information

Erigeron philadelphicus, Philadelphia fleabane,
And botanists, near Reflection Pond

Appendix I

Wildlife Information Gathered During Inventory

Arrowhead blue, *Glaucopsyche piasus*,
near Blue Lake

Wildlife Information Gathered During Inventory

Live-trapping of small mammals in pit traps and Sherman live traps was conducted during the vascular plant surveys. Results are given in the table on page 31.

Butterflies encountered during the inventory were identified as time permitted. A number of species seen during the our time in the field were confirmed during a visit by Canadian lepidopterist Kondla and he is listed as the collector on the species compilation on page 32 except for the few that we encountered that he did not. Doubtless many more species reside on the Sinlahekin than the 33 currently confirmed.

Birds were observed during the inventories, and several new species were added to the Sinlahekin list, including the common yellowthroat (which is indeed a common nester around Forde Lake), yellow-breasted chats (a male singing in a scrub-brush area south of Forde Lake) and American redstarts (in the alder wetlands near headquarters). In addition, a goshawk nest was encountered 100 yards from the main Sinlahekin road just south of Forde Lake. In July three young goshawks were successfully fledged from this nest.

Three other vertebrate species were confirmed on the Sinlahekin during the plant inventories that had not previously been encountered in the Area in recent times. Two yellow pine chipmunk were seen in the forests near Blue Lake, one northern alligator lizard was found in a talus slope along Cecil Creek, and two spotted frogs (*Rana luteiventris*) were seen in the stream running into Reflection Pond. Both spotted frogs were one year old juveniles, and it is likely that they were dispersers from an upland pond just west of the valley with a known breeding population. There are currently no known breeding sites for spotted frogs in the Sinlahekin Valley.

Spotted frog, *Rana luteiventris*, near Reflection Pond

A northern harrier nest in the cattails south of Conner Lake

Small Mammal Trapping

Pit trap lines consisting of five 5-gallon plastic buckets buried at 25' intervals, with a 1' high plastic drift fence running between them, were set up in five distinct plant associations:

1. PSME/SYAL- *Pseudotsuga menziesii/Symphoricarpus alba*- Douglas-fir/snowberry
2. PIPO/AGSP- *Pinus ponderosa//Agropyron spicatum*- ponderosa pine/bluebunch wheatgrass
3. PUTR/BASA- *Purshia tridentata/Balsamorhiza sagitta*- bitterbrush/balsamroot
4. TYLA- *Typha latifolia*- cattail marsh (saturated soil but no standing water)
5. AGAL- *Agrostis alba*- subirrigated meadow

Two Sherman live traps were set within 15' of each bucket, for a total of ten Sherman live traps per trap line. These were baited with a peanutbutter/oatmeal mixture. Each of the lines were open for a total of 6 nights in the months of May and June, 2003; all traps were closed during the day with lids. The results of the this trapping effort are given in the following

Northern pocket gopher mounds were common in the wet meadow, but only one individual was captured. Voles and shrews were identified by dental characteristics (skulls are available); the other species are recognizable from external physical characteristics. Two of the species encountered in this trapping effort had not, to our knowledge, previously been confirmed on the Sinlahekin, the vagrant shrew and the meadow vole. Another small mammal that is surprisingly rare in the Sinlahekin that we encountered in two different locations during plant surveys is the yellow pine chipmunk, *Tamias amoenus*. In addition, a striped skunk (*Mephitis mephitis*) was seen by two observers at Doheny Lake in June of 2003.

This trapping effort was ancillary to other survey efforts and was therefore limited in scope. Several important habitat types were not sampled at all, notably pond margins, alder/birch wetlands, aspen groves, the extensive cliff areas, and the upland forest in the higher altitude, outlying units of the Sinlahekin. Species of small mammals not encountered in this effort that occur in general area of the Sinlahekin Wildlife Area include:

1. long-tailed vole (*Microtus longicaudus*)
2. montane vole (*Microtus montanus)*
3. masked shrew (*Sorex cinereus*)
4. water shrew (*Sorex palustris*)

Key to shrews of the Sinlahekin (figures referred to are in Lloyd Ingle's *Mammals of the Pacific States*):
1a. Hind foot usually more than 18 mm; toes and sides of hind foot edged with a comb-like fringe of stiff hairs directed downward (sometimes inconspicuous; living in or near water. Water shrew, *Sorex palustris*
1b. Hind foot usually less than 18 mm; toes and sides of feet without a comb-like fringe of stiff hairs……2

2a. Third unicuspid as large as or larger than the fourth……..3
2b. Third unicuspid smaller than the fourth……..4

3a. condylobasal length greater than 14.6 mm. Masked shrew, *Sorex cinereus*
3b. condylobasal length 1.6 mm or less; brownish, tail bicolored; along willow-fringed streams. Preble's shrew, *Sorex preblei.*

4a. total length usually less than 110 mm; tail usually less that 46 mm; interorbital width usually less than 3.3 mm; brain case flat (fig. 62, pg 94). Vagrant shrew, *Sorex vagrans*
4b. Total length usually more than 110 mm; tail usually more than 46 mm; interorbital width 3.3 mm or more; brain case high (fig 61, pg 94). Montane (dusky) shrew, *Sorex monticolus (obscurus)*

Key to voles of the Sinlahekin (figures referred to are in Lloyd Ingle's *Mammals of the Pacific States*):
1a. M3 with four projections on the lingual side (Fig 42 & 45, pg 68 & 69)….2
1b. M3 with three projections on the lingual side (Fig 46 & 47, pg 69)…. Heather vole, *Phenacomys intermedius.*

2a. Posterior edge of palate a transverse shelf or a posteriorly projecting spine; angle between the last two projections on the lingual side of M3 may be deeper than wide; M3 without posteriorly projecting "heel" (fig. 45, pg 69); cheek teeth rooted; a band of dorsal reddish fur mixed with black hairs, rather clearly separated from the grayish sides; posterior edge of palate is truncate (fig. 179, pg 285) Gapper red-backed vole, *Clethrionomys gapperi*
2b. Posterior edge of the palate not a transverse shelf; palate with many small holes; angle between the last two projections on the lingual side of M3 wider than deep; M3 often with a pronounced "heel" posteriorly (fig.42, pg 68) cheek teeth not rooted….3

3a Tail usually less than 50% of head and body length…..4
3b. Tail usually more than 50% of head and body length and more or less bicolored. Long-tailed vole, *Microtus longicaudus*

4a. M2 with a rounded posterior loop on the lingual side (fig. 43, pg 69); 5 loops in all; dark brown dorsally, including tops of hind feet; tail weakly bicolored. Marshes and meadows in northeastern WA. Meadow vole, *Microtus pennsylvanicus*.
4b. M2 without a rounded posterior loop on the lingual side (fig. 43 pg 69); 4 loops in all; ears nearly concealed, tail more or less bicolored and usually less than one-third of the head and body length. Wet meadows. Montane vole, *Microtus montanus*


Valley
ON
AREA
Corral
Aeneas
Mountain
750
500

Butterflies of the Sinlahekin Wildlife Area

#	Scientific Name	Common Name	Location	Habitat	Page	Collector
1	Amblyscirtes vialis	roadside skipper	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	106	Kondla
2	Anthocharis sara (stella)	Sara orangetip	Blue Lake cpgrd	Purshia/grass	148	Kondla
3	Celastrina argiolus	spring azure	Fish Lake	Purshia/grass	230	Visalli
4	Coenonympha tullia (california)	ochre ringlet	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	346	Kondla
5	Colias alexandra	Queen Alexandra's sulphur	South of Connor Lake dam	aspen stand edge + rank grass	160	Kondla
6	Colias philodice	clouded sulphur	southern pot hole slough	weedy slough shoreline	154	Kondla
7	Erebia epipsodea hopfingeri	Butler's alpine	South of Connor Lake dam	aspen stand edge + rank grass	354	Kondla
8	Erynnis icelus	dreamy duskywing	southern pot hole slough	weedy slough shoreline	51	Kondla
9	Erynnis persius	Persius duskywing	Forde Lake	old field + lakeshore	54	Kondla
10	Euchloe ausonides	large marble	Forde Lake	old field + lakeshore	142	Kondla
11	Euchloe lotta	desert marble	Cecil Road, sagebrush	sagebrush/grass	146	Kondla
12	Euphilotes battoides	square-spotted blue	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	233	Kondla
13	Euphydryas anicia	anicia checkerspot	South of Connor Lake dam	aspen stand edge + rank grass	306	Kondla
14	Everes amyntula (Cupido amyntula)	western tailed blue	cpgrd S of Forde Lake	Purshia/grass	226	Kondla
15	Glaucopsyche lygdamus columbia	silvery blue	South of Connor Lake dam	aspen stand edge + rank grass	238	Kondla
16	Glaucopsyche piasus toxeuma	arrowhead blue	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	239	Kondla
17	Hesperia juba	juba skipper	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	73	Kondla
18	Icaricia (Aricia) icarioides	Boisduval's blue	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	248	Kondla
19	Icaricia (Aricia) lupini	lupine blue	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	252	Kondla
20	Limenitis lorquini	Lorquin's admiral	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	340	Kondla
21	Lycaeides (Plebejus) melissa	Melissa's blue	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	244	Kondla
22	Lycaena helloides	purplish copper	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	182	Kondla
23	Mitoura spinetorum	thicket hairstreak	southern pot hole slough	weedy slough shoreline	211	Kondla
24	Nymphalis antiopa	mourning cloak	Schalow Lake	riparian woods	324	Visalli
25	Nymphalis californica	California tortoiseshell	Blue Lake	grassland	322	Visalli
26	Polygonia satyrus	satyr anglewing	below Forde Lake	Aspen edge	316	Visalli
27	Papilio eurymedon	pale tiger swallowtail	Cecil Road, sagebrush	sagebrush/grass	126	Kondla
28	Papilio multicaudatus	two-tailed tiger swallowtail	Conner Lake	riparian shrubs	124	Visalli
29	Papilio rutulus	western tiger swallowtail	South of Connor Lake dam	aspen stand edge + rank grass	122	Kondla
30	Satyrium fuliginosum	sooty hairstreak	Cecil Road, sagebrush	sagebrush/grass	194	Kondla
31	Speyeria callippe semivirida	callippe fritillary	Connor Lake dam area	Eriogonum/Lupinus grassland + Purshia stand	270	Kondla
32	Strymon melinus	gray hairstreak	Cecil Road, sagebrush	sagebrush/grass	220	Kondla
33	Thorybes pylades	northern cloudywing	South of Connor Lake dam	aspen stand edge + rank grass	48	Kondla

Scientific names given are from Robert Pyle's 2002 *The Butterflies of Cascadia,* which is also what the page numbers refer to.
Scientific names given in parentheses are alternates used by various authorities.

Appendix II

Rare Plant Locations &

Supplementary Information

Site of main population of *Cypripedium parviflorum*, yellow lady's slipper

Appendix III

Supplementary Information on

Non-Native Plants of the Sinlahekin

Bromus tectorum, cheatgrass